

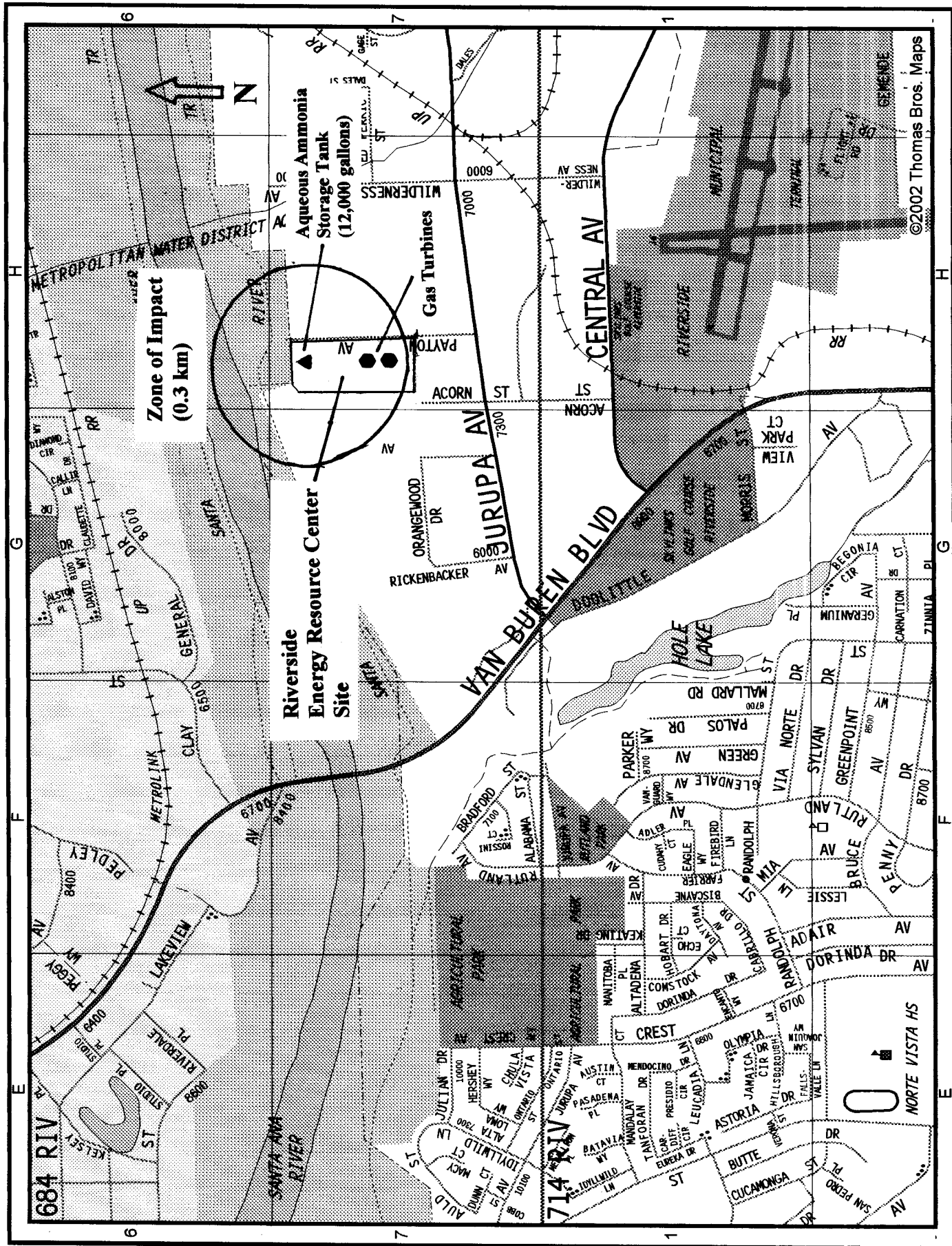
APPENDIX A

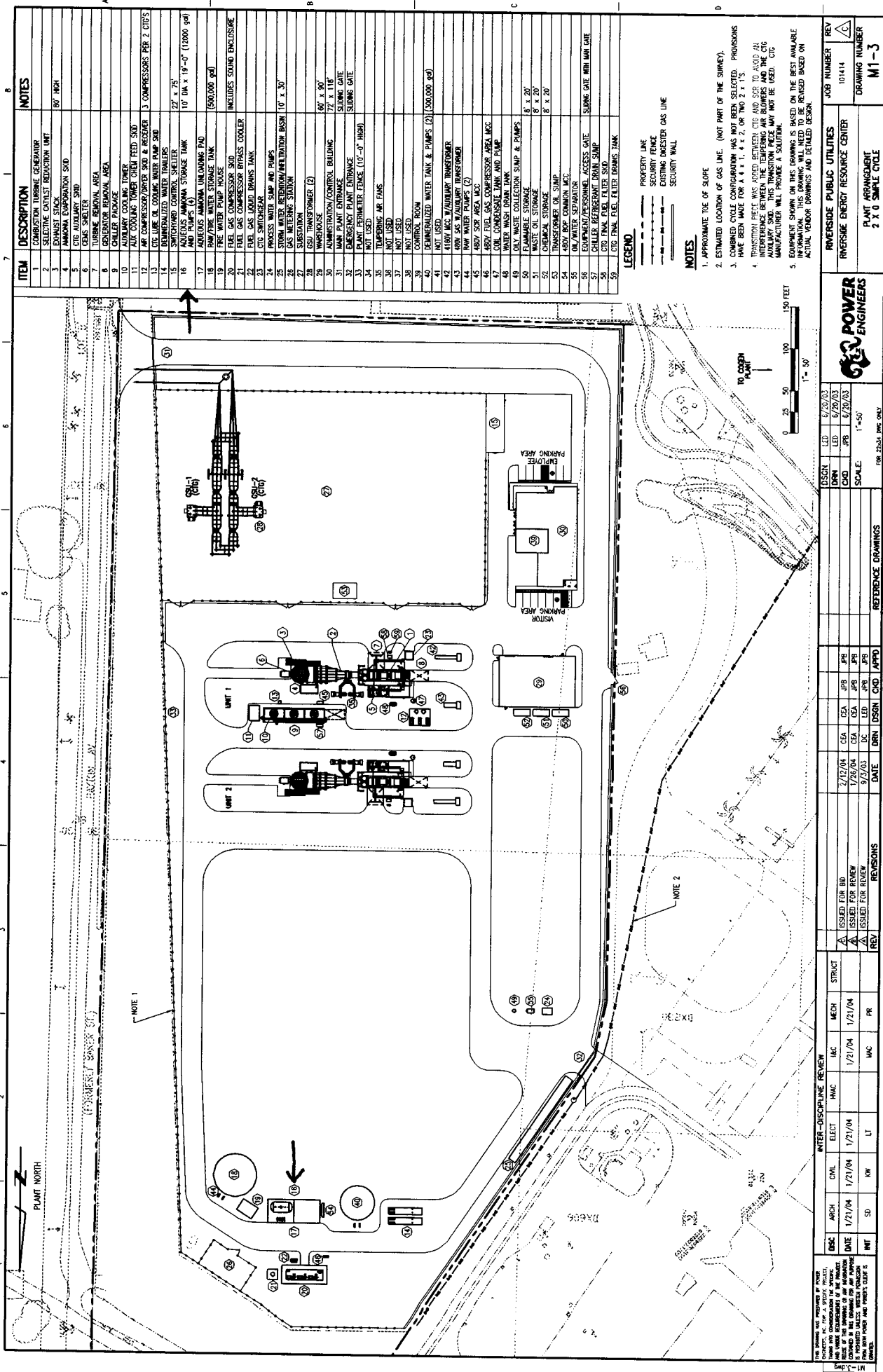
AQUEOUS AMMONIA HAZARD ASSESSMENT ATTACHMENTS

- **Hazard Assessment Parameters**
- **Zone of Impact Diagram**
- **Facility Diagram**
- **RMP Comp Output**
- **Aqueous Ammonia MSDS**

**Aqueous Ammonia Hazard Assessment Parameters
Riverside Energy Resource Center**

Parameter	Description		Source of Information
Tank Size	12,000 Gallons		Project Owner
Ammonia	<20% Solution	CAS# 7664-41-7	Project Owner
Category	Toxic Liquid		-
Scenario	Worst-Case		SCEC
Quantity Released	12,000 Gallons		SCEC
Release Rate	15.8 lbs/minute		Calculated by RMP Comp.
Mitigation Measure	Containment Dikes		Project Owner
Topography	Rural		SCEC
Toxic Endpoint	0.14 mg/L		Calculated by RMP Comp.
Wind Speed	1.5 m/second	3.4 miles/hour	Calculated by RMP Comp.
Stability Class	F		Calculated by RMP Comp.
Air Temperature	77 F		SCEC
Model	RMP Comp (ver 1.07)		-
Distance to Toxic Endpoint	0.2 Miles	0.3 km	Calculated by RMP Comp.





ITEM	DESCRIPTION	NOTES
1	COMBUSTION TURBINE GENERATOR	
2	SELECTIVE CATALYST REDUCTION UNIT	
3	PLANT INFORMATION SKD	60' HIGH
4	PLANT INFORMATION SKD	
5	CITG LUBRICANT SKD	
6	CEAS SHELTER	
7	TURBINE REMOVAL AREA	
8	GENERATOR REMOVAL AREA	
9	CHILLER PACKAGE	
10	AUXILIARY COOLING TOWER	
11	CONDENSATE TANK	
12	WATER TREATMENT SKD	
13	WATER TREATMENT SKD	
14	BEHEATED WATER TREATMENT	
15	BEHEATED WATER TREATMENT	
16	BEHEATED WATER TREATMENT	
17	BEHEATED WATER TREATMENT	
18	BEHEATED WATER TREATMENT	
19	BEHEATED WATER TREATMENT	
20	FUEL GAS COMPRESSOR SKD	
21	FUEL GAS COMPRESSOR BYPASS COOLER	
22	FUEL GAS LIQUID DRAIN TANK	
23	CITG SWITCHGEAR	
24	PROCESS WATER PUMP AND PUMPS	
25	WATER TREATMENT/WATER TREATMENT	
26	WATER TREATMENT/WATER TREATMENT	
27	WATER TREATMENT/WATER TREATMENT	
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LEGEND

- PROPERTY LINE
- SECURITY FENCE
- EXISTING DIAMETER GAS LINE
- SECURITY WALL

NOTES

- APPROXIMATE TOP OF SOLE
- ESTIMATED LOCATION OF GAS LINE (NOT PART OF THE SURVEY)
- COMBINED CYCLE CONFIGURATION HAS NOT BEEN SELECTED. PROVISIONS HAVE BEEN MADE FOR A X 1, A X 2, OR TWO 2 X 1'S
- TRANSITION FEET WAS ADDED BETWEEN CITG AND SCOR TO AVOID AN INTERFERENCE WITH THE SCOR. THIS TRANSITION FEET MAY NOT BE USED. CITG MANUFACTURER WILL PROVIDE A SOLUTION.
- EQUIPMENT SHOWN ON THIS DRAWING IS BASED ON THE BEST AVAILABLE INFORMATION. THIS DRAWING WILL NEED TO BE REVISED BASED ON ACTUAL, VENDOR DRAWINGS AND DETAILED DESIGN.

POWER ENGINEERS		RIVERSIDE ENERGY RESOURCE CENTER		JOB NUMBER 10114		REV	
SCALE: 1"=50'		PLANT ARRANGMENT 2 X 0 SAMPLE CYCLE		DRAWING NUMBER M1-3			
DESIGN	LED	6/20/03	DRN	LED	6/20/03	CDR	JPB
SCALE	1"=50'		SCALE	1"=50'		SCALE	1"=50'
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Results of Consequence Analysis

Chemical: Ammonia (water solution) 20%

CAS #: 7664-41-7

Category: Toxic Liquid

Scenario: Worst-case

Quantity Released: 12000 gallons

Liquid Temperature: 75 F

Mitigation Measures:

Diked area: 750 square feet

Dike height: 3 feet

Release Rate to Outside Air: 15.8 pounds per minute

Topography: Rural surroundings (terrain generally flat and unobstructed)

Toxic Endpoint: 0.14 mg/L; basis: ERPG-2

Estimated Distance to Toxic Endpoint: 0.2 miles (0.3 kilometers)

-----Assumptions About This Scenario-----

Wind Speed: 1.5 meters/second (3.4 miles/hour)

Stability Class: F

Air Temperature: 77 degrees F (25 degrees C)



Material Safety Data Sheet



1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: AQUA AMMONIA

MSDS Number: S00011711

Date: September 23, 1998

Chemical Family: Not applicable

Chemical Name: Aqueous Ammonia Solution

Synonyms: Ammonium hydroxide solution

SOLUTIA INC., 10300 OLIVE BOULEVARD, P.O. BOX 66760, ST. LOUIS, MO 63166-6760

FOR CHEMICAL EMERGENCY, SPILL, LEAK, FIRE, EXPOSURE, OR ACCIDENT
Call CHEMTREC - Day or Night - 1-800-424-9300 Toll free in the continental U.S., Hawaii, Puerto Rico, Canada, Alaska, or Virgin Islands. For calls originating elsewhere: 703-527-3887 (collect calls accepted)

For additional non-emergency information, call: 314-674-6661

2. COMPOSITION/INFORMATION ON INGREDIENTS

<u>Component</u>	<u>CAS No.</u>	<u>% by weight</u>
Ammonium hydroxide	1336-21-6	27 - 37
Water	7732-18-5	63 - 73

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

Appearance and Odor: Clear, colorless solution; pungent, suffocating odor

WARNING STATEMENTS

DANGER!
HARMFUL IF SWALLOWED
CAUSES SEVERE EYE, SKIN AND RESPIRATORY TRACT BURNS
MAY CAUSE LUNG DAMAGE
THIS SUBSTANCE IS CLASSIFIED AS A POISON UNDER THE FEDERAL CAUSTIC POISON ACT

POTENTIAL HEALTH EFFECTS

Likely Routes of Exposure: Skin contact and inhalation

Solutia Material Safety Data Sheet

Aqua Ammonia
MSDS No.: S00011711

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EYE CONTACT: This product causes pain, redness, and tearing based on human experience. At high concentrations or direct contact of liquid material with eyes, it causes damage to eye tissue, and severe eye burns, leading to temporary or permanent blindness.

SKIN CONTACT: This product causes pain, redness, swelling, and blisters based on human experience.

INHALATION: This product causes shortness of breath, severe respiratory irritation and /or burns, violent coughing, chest pain, nausea and vomiting including the possibility of severe lung damage leading to death.

INGESTION: This product causes severe corrosive action to the mouth, throat and stomach.

Refer to Section 11 for toxicological information.

4. FIRST AID MEASURES

IF IN EYES OR ON SKIN: immediately flush with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. If easy to do, remove any contact lenses. Get medical attention. Wash clothing and thoroughly clean shoes before reuse.

IF INHALED: remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Remove material from eyes, skin and clothing.

IF SWALLOWED: rinse mouth thoroughly with water. NEVER GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON. Get medical attention. Contact a Poison Control center. Do not induce vomiting unless directed by medical personnel.

5. FIRE FIGHTING MEASURES

FLASH POINT: Not applicable

HAZARDOUS PRODUCTS OF COMBUSTION: Under certain conditions ammonia can dissociate to nitrogen and hydrogen. Hydrogen is flammable. Certain metals, such as nickel, accelerate decomposition at temperatures as low as 585 degrees F.

EXTINGUISHING MEDIA: In case of fire, use water spray (fog), foam, dry chemical, or CO2.

UNUSUAL FIRE AND EXPLOSION HAZARDS: Ammonia is capable of forming flammable mixtures with air. Contact with oil, mercury, chlorine, bromine, calcium, and silver can lead to an explosion.

FIRE FIGHTING EQUIPMENT: Fire fighters and others exposed to products of combustion should wear self-contained breathing apparatus. Equipment should be thoroughly decontaminated after use.

6. ACCIDENTAL RELEASE MEASURES

Spill or Leak Procedures: Ventilate area of leak or spill. Remove all sources of ignition. Clean-up personnel must wear full protective clothing and self-contained breathing apparatus. Contain and recover liquid when possible. Absorb with vermiculite, dry sand, earth or similar material. Collect and place in containers for disposal.

Refer to Section 13 for disposal information and Sections 14 and 15 for reportable quantity information.

7. HANDLING AND STORAGE

Handling:

Do not get in eyes, on skin, on clothing.
Avoid breathing vapor or mist.

Keep container closed.

Use only with adequate ventilation.
Wash thoroughly after handling.

Emptied container retains vapor and product residue. Observe all labeled safeguards until container is cleaned, reconditioned, or destroyed. The reuse of this material's container for non-industrial purposes is prohibited and any reuse must be in consideration of the data provided in the MSDS.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

EYE PROTECTION: Where there is potential for eye contact, wear chemical goggles and have eye flushing equipment immediately available.

SKIN PROTECTION: Wear appropriate protective clothing and chemical resistant gloves to prevent skin contact. Consult clothing/glove manufacturer to determine appropriate type clothing/glove for given application. Wear chemical safety goggles, a face shield and chemical resistant clothing when splashing is likely. Wash immediately if skin is contaminated. Remove contaminated clothing promptly and launder before reuse. Clean protective equipment before reuse. Provide a safety shower at any location where skin contact can occur. Wash thoroughly after handling.

RESPIRATORY PROTECTION: Avoid breathing vapor and/or mist. Use NIOSH approved respiratory protection equipment when airborne exposure limits are exceeded (See below). Consult respirator manufacturer to determine appropriate type equipment for given application. Observe respirator use limitations specified by NIOSH/MSHA or the manufacturer. Respiratory protection programs must comply with 29 CFR 1910.134.

VENTILATION: Provide natural or mechanical ventilation to control exposure levels below airborne exposure limits (see below). The use of local mechanical exhaust ventilation at sources of air contamination such as open process equipment is preferred.

AIRBORNE EXPOSURE LIMITS:

Product /Component: Ammonia

OSHA PEL:	35 ppm (STEL)#	ACGIH TLV:	25 ppm TWA 35 ppm (STEL)#
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Short Term Exposure Limit.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Colorless or liquid
Odor:	Pungent, suffocating odor
Vapor Pressure:	45.0 psi @ 30 degrees F
Boiling Point:	minus 36 degrees C

NOTE: These physical data are typical values based on material tested but may vary from sample to sample. Typical values should not be construed as a guaranteed analysis of any specific lot or as specifications for the product.

10. STABILITY AND REACTIVITY

STABILITY: Product is stable under normal conditions of storage and handling.

MATERIALS TO AVOID: Oil, mercury, chlorine, bromine, silver, silver solder, hypochlorite (bleach) and calcium in contact with ammonia can lead to an explosion.

HAZARDOUS POLYMERIZATION: Does not occur.

11. TOXICOLOGICAL INFORMATION

Toxicological Data

Solutia has not conducted toxicity studies with aqua ammonia. Information from the available scientific literature is reported below:

Based on results from single exposure (acute) studies with animals, aqua ammonia is considered to be moderately toxic orally (rat). It is severely irritating to rabbit eyes and corrosive to rabbit skin. Eye, skin and respiratory tract irritation was reported in a variety of laboratory animals following inhalation.

Adverse effects reported in several species following repeated inhalation exposures at low concentrations include liver, kidney, spleen, brain and lung damage. Eye damage, permanent blindness, respiratory difficulty, lung injury and deaths were reported at higher concentrations. Positive results were reported in standard tests designed to measure genetic changes using animals and bacterial cells.

12. ECOLOGICAL INFORMATION

Solutia has not conducted environmental toxicity or biodegradation studies with this product. Published aquatic toxicity studies indicate that this material would be toxic to very toxic to invertebrates, fish and algae. Biodegradation studies reported in the literature suggest that this material would meet the criteria for OECD classification as "readily biodegradable".

13. DISPOSAL CONSIDERATIONS

This material when discarded is a hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA), 40 CFR 261.22, due to its characteristic of corrosivity, EPA hazardous waste number D002. Best Demonstrated Available Treatment (BDAT) as defined by RCRA is disposal by Deactivation. Waste liquid may be reclaimed or disposed of in an approved hazardous waste incinerator. Contaminated soils and solid material should be treated and residual materials disposed of in an approved hazardous waste landfill. Small quantities of this material can be diluted and treated in a municipal sewage treatment plant with prior approval from local authorities. In all cases, disposal should be in accordance with all applicable local, state and federal laws and regulations. Consult your attorney or appropriate regulatory officials for information on appropriate disposal.

This product should not be dumped, spilled, rinsed or washed into sewers or public waterways.

14. TRANSPORT INFORMATION

The data provided in this section is for information only. Please apply the appropriate regulations to properly classify your shipment for transportation.

US DOT Classification: Ammonia solutions, 8, UN2672, III

US DOT Label: Corrosive

US DOT Reportable Quantity: Packages of 1000 lbs or more contain a 1000 lb RQ of ammonium hydroxide.

IMDG Code: Same as U.S. DOT

IATA/ICAO: Same as U.S. DOT

Solutia Material Safety Data Sheet

Aqua Ammonia

MSDS No.: S00011711

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15. REGULATORY INFORMATION

TSCA Inventory: Listed

SARA Hazard Notification

Hazard Categories Under Title III Rules (40 CFR 370): Immediate, delayed

Section 302 Extremely Hazardous Substances: None

Section 313 Toxic Chemical(s): None

CERCLA Reportable Quantity: 1000 lb RQ of Ammonium hydroxide

Release of more than 1000 pounds of this product to the environment in a 24 hour period requires notification to the National Response Center (800-424-8802 or 202-426-2675).

California Proposition 65: Not applicable

Refer to Section 11 for OSHA Hazardous Chemical(s) and Section 13 for RCRA classification.

16. OTHER INFORMATION

Reason for revision: Conversion to Solutia 16 section format. Supersedes MSDS dated: 11/5/96.

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Responsible Care® is a registered trademark of the Chemical Manufacturers Association

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Aqua-am.998